July 22. 2005

World Intellectual Property Organization
PCT Division
34, chemin des Colombettes
1211 GENEVA 20
SWITZERLAND

Amendment of the claims under Article 19(1)(Rule 46)

International Application No.: PCT/JP2005/001129

International Filing Date: 27.01.05

Applicant: MATSUSHITA Electric Industrial Co., Ltd.

Agent: Teruo MIYAI

P.O.BOX 24, O.M.M. Bldg. Otemae 1-chome, Chuo-ku, OSAKA 540-0008 JAPAN
TELEPHONE: 81-6-6943-2381
FACSIMILE: 81-6-6943-2382
E-mail: KYU05444 @ nifty. ne. jp

Agent's File reference: PM0448-PCT

Dear sir,

The Applicant, who received the International Search Report relating to the above identified International Application transmitted on 31.05.05, hereby files amendment under Article 19(1) as in the attached sheets.

Further, the Applicant hereby cancels (sheet No. 23-25) entirely, because the intended amendment results in the cancellation of all the claims therein. Thus claims 1, 2, 6, 8, 10 and 20 are amended, claim 3 is canceled and claims 4, 5, 7, 9, 11-19 and 21 are unchanged.

The Applicant also files as attached herewith a brief statement explaining the amendment.

Very truly yours,

Teruo MIYAI

Attachment:

(1) Amendment under Article 19(1)	4 sheets
(2) Brief Statement	1 sheet

WHAT IS CLAIMED IS:

1. (amended) A variable gain circuit, comprising:

a first amplifier with high gain having a first amplifier input and a first amplifier output, and being gain-controlled by a first gain control signal; and

a second amplifier with low gain having a second amplifier input and a second amplifier output, and being gain-controlled by a second gain control signal,

wherein direction of a gain change of the first amplifier with respect to a change of the first gain control signal, and direction of a gain change of the second amplifier with respect to a change of the second gain control signal are set in reverse to each other, and the first gain control signal and the second gain control signal are in common use,

wherein an input signal is supplied in common to the first and the second amplifiers by coupling the first amplifier input and the second amplifier input with each other, and the output signal of the first amplifier and the output signal of the second amplifier are additionally combined by coupling the first amplifier output and the second amplifier output with each other, and

wherein the first amplifier has a function to turn on and off an output in response to a mode switching signal.

2. (amended) The variable gain circuit according to claim 1, wherein the first amplifier is comprising a first fixed

gain amplifier of voltage input current output type, and a first shunt circuit for shunting an output current of the first fixed gain amplifier to two current output terminals at a shunt ratio according to the first gain control signal, and the second amplifier is comprising a second fixed gain amplifier of voltage input current output type, and a second shunt circuit for shunting an output current of the second fixed gain amplifier to two current output terminals at a shunt ratio according to the second gain control signal,

wherein an input terminal of the first fixed gain amplifier and an input terminal of the second fixed gain amplifier form the first amplifier input and the second amplifier input, respectively, and either of the current output terminals of the first shunt circuit and either of the current output terminals of the second shunt circuit form the first amplifier output and the second amplifier output, respectively.

3. (deleted)

4. (not amended) The variable gain circuit according to claim 1, wherein the first amplifier input and the second amplifier input are differential inputs, respectively.

5. (not amended) The variable gain circuit according to claim 4, wherein the first amplifier output and the second amplifier output are differential outputs, respectively.

6. (amended) A variable gain circuit, comprising:

a first amplifier with high gain having a first amplifier

input and a first amplifier output, and being gain-controlled by a first gain control signal;

a second amplifier with low gain having a second amplifier input and a second amplifier output, and being gain-controlled by a second gain control signal; and

a third amplifier having a third amplifier input and a third amplifier output, and being gain-controlled by a third gain control signal,

wherein an input signal is supplied in common to the first and the second amplifiers by coupling the first amplifier input and the second amplifier input with each other, and the output signal of the first amplifier and the output signal of the second amplifier are additionally combined by coupling the first amplifier output and the second amplifier output with each other,

wherein the third amplifier input is coupled with the first amplifier output and the second amplifier output, and the first amplifier has a function to turn on and off an output in response to a mode switching signal.

7. (not amended) The variable gain circuit according to claim 6, comprising a gain correction circuit for correcting an amount of gain change resulting from the output of the first amplifier being cut off, by changing a gain of the third amplifier using the third gain control signal, at the same time when the output of the first amplifier is cut off, wherein an

amplitude fluctuation in the output of the third amplifier is prevented by the gain correction circuit.

8. (amended) A variable gain circuit, comprising:

a first amplifier with high gain having a first amplifier input and a first amplifier output, and being gain-controlled by a first gain control signal;

a second amplifier with low gain having a second amplifier input and a second amplifier output, and being gain-controlled by a second gain control signal; and

a gain control signal converting circuit for creating the first gain control signal and the second gain control signal from a fourth gain control signal,

wherein an input signal is supplied in common to the first and the second amplifiers by coupling the first amplifier input and the second amplifier input with each other, and the output signal of the first amplifier and the output signal of the second amplifier are additionally combined by coupling the first amplifier output and the second amplifier output with each other, and

wherein the first amplifier has a function to turn on and off an output in response to a mode switching signal.

9. (not amended) The variable gain circuit according to claim 6, comprising a gain control signal converting circuit for creating the first gain control signal, the second gain control signal, and the third gain control signal from the

fourth gain control signal.

10. (amended) The variable gain circuit according to claim 9, comprising a gain correction circuit for correcting, in conjunction with the output of the first amplifier being cut off by the mode switching signal, an amount of gain change resulting from the output of the first amplifier being cut off, by shifting the third gain control signal, wherein an amplitude fluctuation in the output of the third amplifier is prevented by the gain correction circuit.

11. (not amended) The variable gain circuit according to claim 10, comprising a detection circuit for outputting the mode switching signal by comparing the fourth gain control signal with a reference signal.

12. (not amended) The variable gain circuit according to claim 10, comprising a detection circuit for outputting the mode switching signal by comparing an output amplitude of the third gain control signal with a reference signal.

13. (not amended) The variable gain circuit according to claim 10, wherein at a subsequent stage of the output of the third amplifier, an amplifier or a mixer circuit is connected, and the variable gain circuit comprises a detection circuit for outputting the mode switching signal by comparing an amplitude of an output signal of the amplifier or the mixer circuit with a reference signal.

14. (not amended) The variable gain circuit according

to claim 10, comprising a detection circuit for outputting the mode switching signal by comparing an input amplitude of the first amplifier with a reference signal.

15. (not amended) The variable gain circuit according to claim 11, wherein the detection circuit, using a clock signal for detection of the fourth gain control signal, has a function to perform the detection at every certain timing.

16. (not amended) The variable gain circuit according to claim 12, wherein the detection circuit, using a clock signal for detection of the output amplitude of the third amplifier, has a function to perform the detection at every certain timing.

17. (not amended) The variable gain circuit according to claim 13, wherein the detection circuit, using a clock signal for detection of the amplitude of the output signal of the amplifier or the mixer circuit, has a function to perform the detection at every certain timing.

18. (not amended) The variable gain circuit according to claim 14, wherein the detection circuit, using a clock signal for detection of the input signal of the first amplifier, has a function to perform the detection at every certain timing.

19. (not amended) The variable gain circuit according to claim 11, comprising a mode switching status circuit for implementing, by a switching enabling signal, an active state of allowing the ON/OFF switching operation for the first amplifier and the control for the gain correction circuit in

conjunction with it, and a sleep state of prohibiting the operation.

20. (amended) A variable gain circuit, comprising:

a first amplifier with high gain having a first amplifier input and a first amplifier output, and being gain-controlled by a first gain control signal;

a second amplifier with low gain having a second amplifier input and a second amplifier output, and being gain-controlled by a second gain control signal; and

an amplifier or an attenuator having a gain varying function, which is arranged at a preceding stage of the inputs of the first amplifier and the second amplifier,

wherein an input signal is supplied in common to the first and the second amplifiers by coupling the first amplifier input and the second amplifier input with each other, and the output signal of the first amplifier and the output signal of the second amplifier are additionally combined by coupling the first amplifier output and the second amplifier output with each other, and

wherein the first amplifier has a function to turn on and off an output in response to a mode switching signal.

21. (not amended) The variable gain circuit according to claim 20, wherein the amplifier or the attenuator having the gain varying function changes a gain simultaneously with generation of the mode switching signal.

EXPLANATORY NOTE BASED ON TREATY ARTICLE 19

The content of claim 3 is added to the content of claim 1. Accordingly, the claim 3 has been deleted.

In claim 1, the content of "direction of a gain change of the first amplifier with respect to a change of the first gain control signal and direction of a gain change of the second amplifier with respect to a change of the second gain control signal are set in reverse to each other, and the first gain control signal and the second gain control signal are in common use" has been clarified. This configuration has not been described anywhere of each cited invention.

In claim 2, the error is corrected.

Claim 6 that cited claim 1 is modified to an independent claim.

Claim 8 that cited claim 1 is modified to an independent claim.

As for claim 10, the cited claim is changed from claim 8 to claim 9.

The change of the aforementioned cited claim is based on the description in the second embodiment (Paragraph [0063] through [0068]), and the description in the third embodiment (paragraph [0069] through [0073]).

Claim 20 that cited claim 1 is modified to an independent claim.